REMARKS

Claims 1-12 are pending in the subject application. By this amendment, applicants have amended Claims 1 and 2. Applicants maintain that the amendments do not raise an issue of new matter. Support for the amendments can be found at least in the previous version of the claims and in paragraph [0046] on page 12. Accordingly, entry of the amendments is respectfully requested.

Claim Objections

Claim 1 is objected to because it was not clear in the original claim if the organic sulphur-containing compound forms a complex with the boric acid compound, and which layer contains the boric acid compound.

Claim 2 is objected to because the location of the dye-fixing layer was not clear in the original claim.

Claims 1 and 2 have herein above been amended to clarify the features indicated by the Examiner. Accordingly, reconsideration and withdrawal of these objections are respectfully requested.

Rejections under 35 U.S.C. §103(a)

Claims 1 to 12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ohbayashi et al. (US 6,492,005 B1) in view of Farooq et al. (US 6,703,112 B1).

Applicants respectively traverse this rejection.

The present invention relates to an ink-jet printing material having a support, an image recording layer located on the support and a protective layer on the image recording layer. Essential for the present application is that improved resistance to the action of ozone and at the same time a high light fastness are achieved with the separate protective layer that includes several protecting agents.

In the Examiner's assessment of patentability, the Examiner compares the present invention with the teaching of Ohbayashi et al. and comes to the conclusion that the subject matter of Claim 1 of the present application differs from the disclosure of Ohbayashi et al. because Ohbayashi et al. do not teach the presence of an organometallic compound. In the present invention, the organometallic compound is in the separate protective layer.

The Examiner argues that the ink absorptive layer in Column 17, line 1 of Ohbayashi et al., which "may be comprised of two layers or more" is equivalent to the claimed protective layer and image recording layer. Applicants maintain that a condition for such a equivalence would be that the function of the protective layer is the same as the "more than two ink-absorptive layers" of Ohbayashi et al. However, the protective layer is not equivalent to an ink-absorbing layer because the ink-absorbing layer in an ink-jet recording material absorbs the ink liquid and keeps the dye stuff of the ink liquid in the absorptive layer or image recording layer to carry the image. In the case of the present application, the protective layer is located as a separate layer on the upper side of the image recording layer. The ink liquid, applied by the ink-jet printer on the protective layer of the ink-jet recording material of the present application, is absorbed into the image recording layer due to the sucking action of the image recording layer below the protective layer. Thus, the ink liquid after having been applied on the protective layer at the surface of the ink-jet recording material of the invention is transferred through the protective layer to the image recording layer but does not remain in the protective layer.

In the case where the image recording layer of the invention contains an ink absorbing layer located on the support and a dye-fixing layer located on the ink-absorbing layer (as in Claim 2), the same will happen. Thus, the ink is applied on the protective layer and ink liquid is sucked by the sucking action of the ink-absorbing layer through the protective layer in the dye-fixing layer where the dye-stuff is fixed and the liquid is finally

absorbed into the ink absorbing layer and, possibly, in the support. Accordingly, also in the design of the ink-jet recording material of Claim 2 of the present invention, the protective layer has a different function as compared to the two or more ink absorptive layers of Ohbayashi et al..

The protective layer of the claimed ink-jet recording material cannot be regarded equivalent to an absorptive layer because the protective layer of the invention is not capable of replacing the ink-absorptive layer. The protective layer of the invention serves to protect against the action of ozone and to keep light fastness of the recording material high. Accordingly, the properties of both layers are different; thus, they cannot be functionally equivalent.

According to Claim 1 of the present invention a boric acid compound is present in the protective layer. Ohbayashi et al. suggest boric acids and salts thereof as preferred hardener if polyvinyl alcohol and/or cation modified polyvinyl alcohol are used as hydrophilic binder in the ink-receiving layer. Thus, the boric acid when used according to Ohbayashi et al. acts as a hardener for the polyvinyl alcohol binder and is present in the same layer as the polyvinyl alcohol. Ohbayashi et al. do not teach boric acids and salts thereof to be present in a separate layer. Instead, the binding agent and the hardener for the binding agent (boric acid or salt thereof) are present in the ink-absorptive layer (Col.15, lines 46-52; Col.13, lines 32-34).

Farooq et al. teach the use of organometallic salts in ink-jet receptor media. These compounds are taught to have an effect on pigment managing and ink-drying. The term pigment managing which is used in Farooq et al. describes a specific design of the recording material according to which the ink pigment (color pigment of the ink liquid) is advantageously distributed or embedded in the porous membrane of Farooq et al. to provide an image. The organometallic salts of Farooq et al. are located in the ink-absorptive layer, i.e. they are included in compositions I to IV of Column 13 of Farooq et

al. which form the ink-receptive layer. Farooq et al. do not disclose a separate protective layer including the components of Claim 1 of the present application.

The Examiner mentions on page 3, 2nd full paragraph of the Office Action that the use of aromatic carboxylic acids along with metal ions is well known in the art to serve as drying agents for ink-jet receptor media. Farooq et al. teach that the organometallic salt releases both a multivalent cation and an organic acid anion (Col.6, lines 33-38). The metal cation plays the role of pigment managing system and the organic acid anion plays the role of a dehydrating or drying agent. Both aforementioned activities are important after printing in the image recording layer.

The carboxylic acid of the present application is located in the protective layer not in the ink-absorptive layer. In the protective layer of the present invention, however, dehydration is not desired because the image shall not be created in the protective layer. In contrast, dehydration in the protective layer could adversely affect the ink liquid being absorbed in the ink-absorption layer.

The boric acid and the carboxylic acid suggested in Ohbayashi et al. and in Farooq et al., respectively, are suggested to be included in the ink-absorption layers and for different purposes as compared to the present application.

In the protective layer of the present invention the function of MeX and MeX_2 salts is to improve the resistance against the action of ozone and at the same time maintain the desired level of light fastness of the recording material. A problem is that improving the resistance to the action of ozone very often results in a decreased light fastness. This problem, however, is overcome with a protective layer having the compounds of Claim 1 of the invention including the MeX or MeX_2 salts.

The skilled person would not take into account Farooq et al. for solving the problem of the invention. Farooq et al. are silent with regard to the problem of the

present invention. Farooq et al. have a different intention to use the organometallic salts than the protective function of the present invention.

Thus, the combined teachings of Ohbayashi et al. and Farooq et al. do not teach or suggest Claim 1 of the present application, i.e. that a separate protective layer is located on the image recording layer, and that the separate protective layer contains (1) an organic sulphur-containing compound which forms complexes with metal ions, (2) a boric acid compound, and (3) an organic compound having the formula MeX or MeX_2 where Me is a transition metal from group VIb, VIIb, VIIIb, Ib and IIb in the Periodic Table and X is an anion of a carboxylic acid having 4 to 12 carbon atoms. The present invention presents a new design for an ink-jet printing material having an improved resistance to the action of ozone and at the same time a high light fastness, in particular having a reduced so-called color shift/ color gamut.

Reconsideration and withdrawal of this ground of rejection are respectfully requested.

CONCLUSIONS

In view of the preceding amendments and remarks, applicants respectfully request that the Examiner reconsider and withdraw the objections and rejections set forth in the February 7, 2006 Office Action, and earnestly solicit allowance of the claims under examination. If there are any minor matters preventing allowance of the subject application, the Examiner is requested to telephone the undersigned attorney.

No fee is deemed necessary in connection with the submission of Amendment. However, if any fee is required to maintain the pendency of the subject application, authorization is hereby given to withdraw the amount of any such fee from Deposit Account No. 01-1785.

Respectfully submitted,

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By _____
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